

Name \_\_\_\_\_

Date \_\_\_\_\_

# ABSOLUTE VALUE and DOUBLE ABSOLUTE VALUE

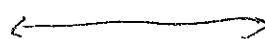
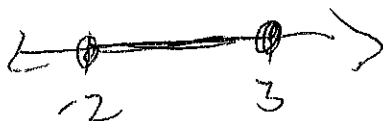
1.  $|2x-1| \leq 5$

2.  $-7 \leq |1-2x| < 3$

$x \leq 3$  AND  $x \geq -2$

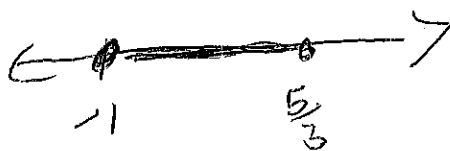
$x < 4$  OR  $x \geq -3$

$x > -1$  AND  $x < 2$



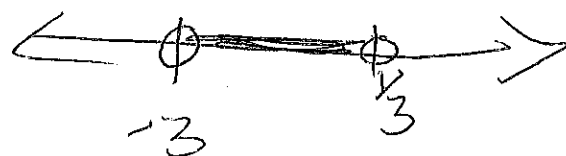
3.  $-1 < |1-3x| \leq 4$

4.)  $|2x+1| < |x+2|$



5.  $|2x-4| \leq |x-5|$

6.  $|x-3| > |2x+1|+1$



# Absolute Value + Double Abs Value (Ws)

1.  $|2x-1| \leq 5$

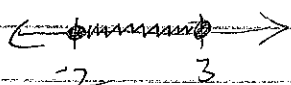
$2x-1 \leq 5$  AND  $2x-1 \geq -5$

$2x \leq 6$

$2x \geq -4$

$x \leq 3$

$x \geq -2$



2.  $-7 \leq |1-2x| < 3$

$|1-2x| \geq -7$  AND  $|1-2x| < 3$

$1-2x \geq -7$  OR  $1-2x \leq 7$

$1-2x < 3$  AND  $1-2x > -3$

$-2x \geq -8$

$-2x \leq 6$

$-2x < 2$

$-2x > -4$

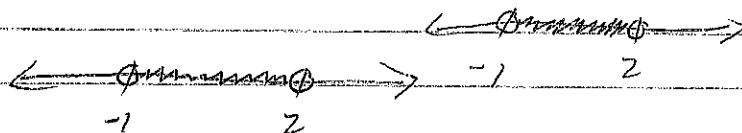
$x \leq 4$

$x \geq -3$

$x > -1$

$x < +2$

TR



3.  $-1 < |1-3x| \leq 4$

$|1-3x| > -1$

AND

$|1-3x| \leq 4$

$1-3x > -1$  OR  $1-3x < 1$

$1-3x \leq 4$  AND  $1-3x \geq -4$

$-3x > -2$

$-3x < 0$

$-3x \leq 3$

$-3x \geq -5$

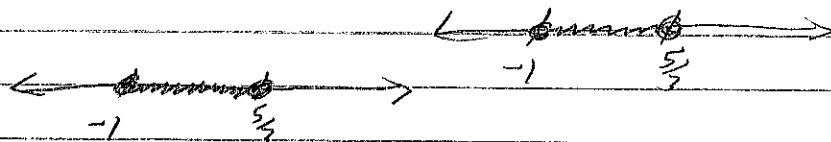
$x < \frac{2}{3}$

$x > 0$

$x \geq -1$

$x \leq \frac{5}{3}$

TR



4.  $|2x+1| < |x+2|$

$$2x+1 < |x+2| \quad \text{AND} \quad 2x+1 > -|x+2|$$

$$|x+2| > 2x+1 \quad -2x-1 < |x+2|$$

$$x+2 > 2x+1 \quad \text{OR} \quad x+2 < -2x-1 \quad |x+2| > -2x-1$$

$$1 > x \quad 3x < -3 \quad x+2 > -2x-1 \quad \text{OR} \quad x+2 < 2x+1$$

$$x < 1 \quad x < -1 \quad 3x > -3 \quad 1 < x$$

$$\text{Number line: } \xrightarrow{\text{---} \bigcirc \text{---}} \quad x > -1 \quad x > 1$$

-1      1

$\xleftarrow{\text{---} \bigcirc \text{---}}$

-1      1

5.  $|2x-4| \leq |x-5|$

$$2x-4 \leq |x-5| \quad \text{AND} \quad 2x-4 \geq -|x-5|$$

$$|x-5| \geq 2x-4 \quad -2x+4 \leq |x-5|$$

$$x-5 \geq 2x-4 \quad \text{OR} \quad x-5 \leq -2x+4 \quad |x-5| \geq -2x+4$$

$$-1 \geq x \quad 3x \leq 9 \quad x-5 \geq -2x+4 \quad \text{OR} \quad x-5 \leq 2x-4$$

$$x \leq -1 \quad x \leq 3 \quad 3x \geq 9 \quad -1 \leq x$$

$$\text{Number line: } \xrightarrow{\text{---} \bigcirc \text{---}} \quad x \geq 3 \quad x \geq -1$$

-1      3

$\xleftarrow{\text{---} \bigcirc \text{---}}$

-1      3

$$6. \quad |x-3| > |2x+1| + 1$$

$$x-3 > |2x+1| + 1 \quad \text{OR} \quad x-3 < -( |2x+1| + 1 )$$

$$x-4 > |2x+1|$$

$$-x+3 > |2x+1| + 1$$

$$-x+2 > |2x+1|$$

$$|2x+1| < x-4$$

$$|2x+1| < -x+2$$

$$2x+1 < x-4 \quad \text{AND} \quad 2x+1 > -x+4$$

$$2x+1 < -x+2 \quad \text{AND} \quad 2x+1 > x-2$$

$$x < -5$$

$$3x > 3$$

$$3x < 1$$

$$x > -3$$

$$x > 1$$

$$x < \frac{1}{3}$$

$\emptyset$

